

Notice of Allowability

Application No.

10/070,278

Examiner

John P. Leubecker

Applicant(s)

HOMMA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to March 6, 2002.
2. ☒ The allowed claim(s) is/are 1-22.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 3/6/02
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruce Arnold on January 28, 2005.

The application has been amended as follows:

IN THE SPECIFICATION

Delete copy of Abstract appearing on page 49 of the specification (An original Abstract appears on page 48).

In the Abstract (page 48), line 1, replace "The present invention relates to an endoscope optical system capable" with -An endoscope optical system is capable--.

IN THE CLAIMS

In claim 7, line 2, change "clime" to -claim--.

IN THE DRAWINGS

2. The following changes to the drawings have been approved by the examiner and agreed upon by applicant: In Figure 2, a lead line will be inserted to point to the space between surfaces

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r_2 and r_3 to indicate the volume of an air layer V_1 . In Figure 4, a lead line will be inserted to point to the space between surfaces r_2 and r_3 to indicate the volume of an air layer V_2 . In order to avoid abandonment of the application, applicant must make these above agreed upon drawing changes.

3. The following is an examiner's statement of reasons for allowance: Claims 1, 6 and 9 claim an endoscope image pickup optical system using a monochromatic high-density solid-state image pickup device with an average pixel pitch $(H+V)/2$ of either not more than 4.65 or 6 micrometers, or using an interline type color high-density solid-state image pickup device in which an average pixel pitch $(H+V)/2$ is either not more than 3.1 or 3 micrometers. Claim 1 further recites that a volume V_1 of an air layer between an optical element closest to an object side in the image pickup optical system and a second optical element immediately subsequent to said optical element toward an image side satisfies the condition $V_1 < 4 \text{ mm}^3$. Although monochromatic and color high-density solid-state image pickup devices with a pixel pitch of several micrometers and known in the art, the prior art of record fails explicitly teach or fairly suggest such in combination with the volume of the air layer as recited in claim 1. Furthermore, the prior art of record fails to explicitly teach or fairly suggest such high-density solid-state image pickup devices wherein the length from a center of a viewing window to an edge thereof on an object-side surface of an optical element closest to an object side in the image pickup optical system is denoted ϕ and a maximum ray height of rays within a visual field on the object side surface of the optical element from an optical axis of an objective optical system is denoted by h , a minimum margin $Y=(\phi-h)$ for the length to the edge of the objective window with respect

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to the ray height satisfies the conditions: $1.0 \text{ mm} < \phi < 3.5 \text{ mm}$, and $0.12 \text{ mm} < Y < 0.6 \text{ mm}$, as claimed in claim 6. In addition, the prior art of record fails to explicitly teach or fairly suggest such high-density solid-state image pickup devices wherein an optical element closest to an object side in the image pickup optical system uses a material having a Knoop hardness of not less than 800, as claimed in claim 9. For these reasons, claims 1, 6 and 9 are allowable over the prior art of record.

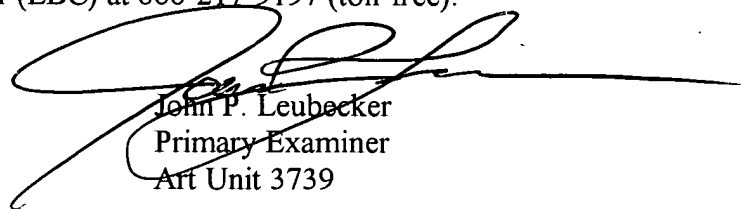
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Leubecker whose telephone number is (571) 272-4769. The examiner can normally be reached on Monday through Friday, 6:00 AM to 2:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda C.M. Dvorak can be reached on (571) 272-4764. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John P. Leubecker
Primary Examiner
Art Unit 3739

jpl